

REMARKS

Claims 18 and 48 have been canceled.

The finality of the Office action mailed August 30, 2007 has been withdrawn. The amendment filed November 19, 2007 has been entered.

Applicant previously elected the following species without traverse: A naphthacene compound of Formula I where R2 and R4 are aryl and R1, R3, R5, and R6 are alkyl and with the ultimate species = Inv 2 at page 15.

The Examiner objects to Claims 1, 19, 39, 45 and 48 because of the following informalities (Applicants' responses in bold):

- a. In claim 1, part (c), the period should be deleted at the end of part (c) since this is not the end of the claim.

Correction has been made.

- b. In claim 19, the period after "layer" in part (c) should be deleted since this is not the end of the sentence.

The punctuation in the claim is a comma rather than a period and is believed to be appropriate

- c. Claims 39 and 48 should comprise a period at the end of the claim.

Claim 48 has been cancelled. Correction has been made to Claim 39.

- d. In claim 45 the strikethrough marks in both transistors and TFTs should be removed, since the claim was previously amended. In addition, it appears the "s" at the end of "transistor" and "TFT" should be removed.

Correction has been made.

The Examiner rejects Claim 14 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. According to the Examiner,

Claim 14 comprises a formula Inv-21 that appears to be outside of the definition for the naphthacene derivatives of parent claim 1. Inv-21 comprises both a CF₃ and F substituent on the same phenyl ring. Formula (I) does not appear to allow for "R₄", for instance,

to be two different substituents. “R₄” may be contained in a number of 2, but two substituents, if present, should be the same group.

Applicants see the Examiner’s point but the language is clear that “each substituent is individually selected” from the specified groups and the presence of Inv-21 only serves to further reinforce the meaning of “individually” in the definition.

Claims 1, 6-8, 13-18, 24-33, 41, 42, 46 and 47 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (US 5,503,910) in view of Sato et al. (JP 04-335087). According to the Examiner:

Matsuura teaches organic light emitting devices having first and second emitting layers (see abstract). Matsuura teaches a bluish layer and a reddish/yellow layer (see col. 3, lines 11-19). There may be a layer with a hole transporting material and may emit in the 580nm to 650nm range per the “hole transporting layer” (see col. 3, lines 20-28). The reference teaches rubrene as a dopant (see col. 61, bottom compound). The device further includes an electron transporting layer (see col. 66, lines 49-56). The blue layer may comprise a disytryl compound as a dopant (see examples and Table 1) with respect to the limitations in claim 1, part c.

Matsuura is silent with respect to the specific rubrene species currently under consideration, but does teach compounds such as rubrene are appropriate. Sato teaches in analogous art naphthacene derivatives of the following formula for

[Formula (1)]

an EL device in which R1-R4 may include alkyl or substituted aromatic hydrocarbon groups and R5 and R6 may include alkyl groups (see abstract). Although Sato fails to specify an aryl group as a possible substituent group for the aromatic hydrocarbon group, aryl groups are well known as substituents. It would have been obvious to one of ordinary skill in the art to have formed the Matsuura device using the rubrene derivatives taught by Sato in place of the rubrene taught in Matsuura, because one would expect the rubrene derivatives to be similarly useful as a light emitting material for the Matsuura device....

It does not appear that the teachings of Sato can be relied on to predict the effect in a white emitting device as claimed herein. Sato is directed to the use of rubrene-type materials as yellow emitters with no suggestion for use in combination with a blue light emitting layer to produce white light. In the invention, the rubrene derivative is used as an emitter in combination with a blue

emitter in a multilayer device in which there is co-action between the several layers during operation from both an electronic and emission color-science standpoint. It is not apparent to one skilled in the art that the teachings of Sato can be applied with any degree of confidence to the teachings of Matsuura.

The Examiner has indicated that the content of claims 21, 22, 34, 45, 48, and 50-52 is allowable. Applicants have amended claim 1 to narrow the broad language as to the blue light emitter. The blue light emitter is now limited to that of Claims 19 or 21. Nowhere is there a suggestion that efficiency superior to rubrene can be obtained with a white device employing the specified blue and yellow emitters. The Examiner acknowledges that the combination of a boron complex blue emitter with the modified rubrene is unobvious, and it is believed the same can be said for the perylene blue emitters tested and claimed. The enclosed unsigned Declaration Under Rule 132 of inventor Hatwar serves to demonstrate that the beneficial effects of the invention are obtained with perylene emitters as well as boron complex emitters. (The inventor is out of town and not available for signature; an executed copy will be submitted immediately upon his return.)

Claims 19, 20, 35-40, 43, 44, and 49 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. (US 5,503,910) in view of Sato et al. (JP 04-335087) in further view of Kobori et al. (US 6,285,039).

According to the Examiner:

With respect to claim 19 and 20, Kobori teaches the inclusion of known perylene derivatives (see col. 21, lines 21-24). With respect to claim 20, it would be obvious to add alkyl substituents to perylene, because one would not expect the alkyl substitution to affect the functionality of the perylene skeleton significantly. It would have been obvious to one of ordinary skill in the art to have incorporated a green emitting layer, perylene derivative dopants, color filter and/or multiple dopants in the Matsuura et al. device, because Kobori et al. teaches it is known in the art to add these features in order to achieve a device emitting of a desired color with a predictable result.


Although Kobori is directed to multi light-emitting layers, there is still no predictable basis for applying the teachings of Sato to a white emitting device and there is no suggestion of the benefits of using derivatized rubrene materials. Rubrene appears to be specifically mentioned as compound 1-22 at col. 53 but the disclosure is shotgun in nature and not suggestive of the presently

claimed combination. The Examiner is requested to identify where in Kobori there is a specific teaching of the use of a derivatized rubrene in a yellow emitting layer of a white device, if she is aware of one. So far, unsubstituted rubrene appears to be the closest art and appears to be the right comparison vs. Kobari.

Claims 1, 6-8, 13-22, and 24-52 stand provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-26 and 32-50 of copending Application No. 10/897357. Claims 1, 6-8, 13-19, 21-22, and 26, 35-40, and 46 stand rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 7,288,330. A suitable executed Terminal Disclaimer is enclosed.

In view of the foregoing amendments, remarks and enclosed Terminal Disclaimer, the Examiner is respectfully requested to withdraw the outstanding rejection and to pass the subject application to Allowance.

Respectfully submitted,



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If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.

Encl: Terminal Disclaimer; Declaration Under Rule 132